A4

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT:	FIELDING, VICTOR
Application No.:	10/072,197
Filing Date:	02/07/02
For:	SELF COMPENSATING AMPLIFIER AND DRIVER FOR BROADCAST DATA RECEIVER
Art Unit:	2817

TRANSMITTAL OF PRIORITY DOCUMENT

Director for Patents and Trademarks
Washington, D.C. 20231

Dear Sir:

Enclosed herewith is a certified copy of British Patent Application No. 0103082.4 for which the above-identified patent application claims priority from.

If, for any reason, this priority document is not acceptable, please inform the undersigned as soon as possible.

Respectfully Submitted

HEAD, JOHNSON & KACHIGIAN

Date: 03/15/02

Customer No. 24,118

Mark G. Kachigian, Reg. No. 32,840
228 West 17th Place
Tulsa, Oklahoma 74119
(918) 584-4187
Attorney for Applicant

"EXPRESS MAIL" Mailing Label No. EL779649880US
Date of Deposit: March 15, 2002
I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington D.C. 20231 by Amy Miles.

Amy Miles

PATENTS • DESIGNS • COPYRIGHT • TRADE MARKS
The Patent Office

INVESTOR IN PEOPLE

The Patent Office
Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

Signed

Dated 8 February 2002

Patents Form 1/77

Patents Act 1977
(Rules 16)

The Patent Office

THE PATENT OFFICE
B
- 8 FEB 2001
NEWPORT

08FEB01 E604311-7 D00346
P01/7700 0.00-0103082.4

1/77

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road
Newport
Gwent NP9 1RH

1. Your reference — GW-G30841

2. Patent application number
(The Patent Office will fill in this part) — 0103082.4 — 08 FEB 2001

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

Pace Micro Technology Plc

Victoria Road
Saltaire
Shipley
BD18 3LF

Patents ADP number *(if you know it)*

If the applicant is a corporate body, give the country/state of its incorporation — **England**

75885690001

4. Title of the invention — **Self Compensating Amplifier and Driver**

5. Name of your agent *(if you have one)* — **Bailey Walsh & Co.**

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

5, York Place
Leeds
LS1 2SD

Patents ADP number *(if you know it)* — **224001**

6. If you are declaring priority from one or more earlier patent applications, give the and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

Country	Priority application number *(if you know it)*	Date of filing *(day / month / years)*

7. If this application is divided or otherwise derived from an earlier UK application, the earlier application

Number of earlier application	Date of filing *(day / month / years)*

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer "Yes" if:*

a) any applicant named in part 3 is not an inventor, or

b) there is an inventor who is not named as an applicant, or

c) any named applicant is a corporate body

See note (d)

Yes

Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document.

Continuation sheets of this form	
Description	4
Claim(s)	
Abstract	
Drawing(s)	1 + 1

10. If you are also filing any of the following, state how many of each item.

Priority Documents	
Translations of priority documents	
Statement of inventorship and right to grant of a patent *(Patents Form 7/77)*	
Request for preliminary examination and search *(Patents Form 9/77)*	
Request for substantive examination *(Patents Form 10/77)*	
Any other documents *(Please specify)*	

11. I/We request the grant of a patent on the basis of this application

Signature: B W Co.

Date: **07.02.01**

12. Name and daytime telephone number of person to contact in the United Kingdom: **G Wood**
0113 2433824

Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

Notes

a) *If you need help filling in this form or you have any questions, please contact the Patent Office on 0645 500505.*

b) *Write your answers in capital letters using black ink or you may type them.*

c) *If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.*

d) *If you have answered 'Yes' Patents Form 7/77 will need to be filed.*

e) *Once you have filled in this form you must remember to sign and date it.*

f) *For details of the fee and ways to pay, please contact the Patent Office.*

Self Compensating Amplifier and Driver

The invention which is the subject of this application relates to improvements to the operation of broadcast data receivers and, in particular, to the provision of amplifiers and drivers therefor.

In a broadcast data receiver there is received a number of data streams, one of which is a video signal carrying video data. Said signal is typically carried at between 0 to 1 volts. The broadcast data receiver itself is provided to receive video data, audio data and auxiliary data, and allow the processing of the same so as to allow generation of video, audio and/or auxiliary displays on a display screen and speakers connected thereto. Typically provided within the broadcast data receiver are amplifiers such as simple discreet amplifiers. However, for the same to be able to receive the video signal at between 0 to 1 volt, a DC offset is required to be introduced to the amplifiers to bias the same on the input transistor.

In practise, it is found that the introduction of the DC offset means that any offset voltage is amplified by the gain of the amplifier and hence appears as an amplified DC offset on the output of the same which is undesirable. Furthermore, the operating temperature of these components can change through time and in different environments and so any temperature change effects tends to be amplified , and appears as a further DC offset on the output of the amplifier which again is a problem in the operation of this form of apparatus.

Conventionally, attempts to solve the problem have foundered in that while a particular circuit or DC supply arrangement may solve a particular problem at particular temperatures, if the operating condition changes then the previous solution may not

prove to be a solution in the new operating conditions and in some instances may in fact be a further disadvantage.

Thus, to date, this type of problem has been regarded as being something which has to be tolerated but the aim of the present invention is to provide a solution to these problems and furthermore, to provide a solution which is adapted in that changes in operating conditions of the components can be taken into account.

In a first aspect of the invention, there is provided apparatus for receiving a video signal from video encoder, said video signal provided within a voltage range and wherein said voltage signal is required to be connected to at least one amplifier requiring a DC offset to bias on the input transistor and wherein there is provided a video amplifier and driver circuit which allows compensation in operation due to changes in operating conditions.

In one embodiment, changes in operating temperature and/or amplification of a bias voltage can be taken into account and, used in the subsequent compensation of the circuit of the invention to provide a DC offset at the input transistor of required value.

A specific embodiment of the invention is now described with reference to the accompanying drawing, which shows one possible embodiment of a self compensating circuit in accordance with the invention.

The circuit illustrates a supply typically + and –5 volts in connection with an input which in turn leads, through the self compensating circuit, to outputs 1 and 2. Referring to the circuit diagram, if the values of R6 = the value of R7, then Q1B,

R5, R6, R7 and Q2 are used to form a x2 (6db) DC amplifier. This amplifier amplifies the voltage at the Q1B emitter which in turn is referenced to the negative supply by a factor of 2.

The resistors R1, R2, R4 and Q1A act to form a constant current supply that provides a constant voltage drop across the resistor R3 and, although constant, the value of the same is dependent upon the current flowing through it.

In practise, if R3 = R4 then any change in the Q1A Vbe is passed onto R3 to compensate for changes in Q1B's Vbe.

If R1 = R2 then the voltage cross R4 will have a value which is half of the negative supply less the Vbe value for Q1A.

If a low impedance video signal is applied to R3, it will appear at the base of Q1B however will have a DC shift added which is equal in magnitude to that across R4. Thus, in practise, when this combined signal is applied to the base of Q1B the signal that appears at the emitter of Q1B is in fact the video signal. However, the video signal is offset by half of the value of the negative supply voltage and so the x2 gain which is produced serves to amplify the signal to bring the DC component to ground level and also serves to amplify the video signal by 2. The capacitors C1, C2 positioned across R3 and R6 respectively are there to provide frequency compensation.

Thus, it will be seen from this invention and the specific example of the same, that the circuit which is provided allows self compensation of the values dependent on the values of voltage and temperature which are entering the circuit at any one time.

It may also be possible in one embodiment to include an additional resistor at the position of R3 to overcome any negative outputs which are experienced. The provision of the self compensating circuit allows relatively simple video amplifiers to be used and the problems conventionally associated with such use to be overcome.

SIMPLE SELF COMPENSATING VIDEO AMPLIFIER AND DRIVER CIRCUIT